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VERIFICATION OF TRANSLATION

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certify that I am familiar with the English and Japanese languages, and to the best of my knowledge and belief the following is a true translation of the officially certified copy of the Japanese Patent Application, H10-035301.

This 24 day of September, 2003

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[Document Name] PATENT APPLICATION
[Identification No.] 01701887
[Date of Submission] Heisei 10(A.C.1998), February 18
[To] Commissioner of Japanese Patent Office
[International Patent Classification] H04B 7/26
[Name of the Invention] SELECTIVE CALL RADIO APPARATUS WITH IMPROVED DISPLAY FUNCTION
[Number of Claims] 6
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[Indication of Charge]
[Deposit Payment Register Number] 030982
[Amount of Fee] 21000yen
[Items of the Filing Articles]

[Article Name]	Specification	one copy
[Article Name]	Drawings	one copy
[Article Name]	Abstract	one copy

[General Power of Attorney] 9003474
[Proof] Necessary

[Document Name] Specification

[Title of the invention]

SELECTIVE CALL RADIO APPARATUS WITH IMPROVED DISPLAY FUNCTION

[Scope of Patent to be Claimed]

[Claim 1]

A selective call radio apparatus with display function including

a means of memory for a message received, and

a means of display for displaying the message read out by said means of memory, wherein a means for control is characterized in which the latest message, which is received when the message read out by said means for memory is displaying by said means for memory, is controlled to display discriminating from the message already memorized by said means for memory.

[Claim 2] A selective call radio apparatus with display function according to claim 1, wherein said means for control is characterized by displaying said latest message in different expression from the message memorized by said means for memory.

[claim 3]

A selective call radio apparatus with display function according to claim 1, wherein said means for control

is characterized by reversed displaying said latest message.

[claim 4]

A selective call radio apparatus with display function according to claim 1, wherein said means for control is characterized by reversed displaying said latest message.

[claim 5]

A selective call radio apparatus with display function according to any one of claim 1 to 4, characterized in a means for control that the message to be displayed next of the latest message should become a message which had been displayed just before the said latest message is displayed.

[claim 6]

A selective call radio apparatus with display function including

a means of memory for received message and a means for display the message reading out by said means for memory, characterized by

a meaning for interrupting to display the message read out by said means for memory and displaying the latest received massage when the message, which is read out by said means for memory, is displayed by

said means of display,

and a means for control that the message to be displayed next of the latest message should become a message which had been displayed just before the said latest message is displayed.

[Detailed Description of the Invention]

[0001]

[Technical Field to which the Invention belongs]

The present invention relates to a radio selective call apparatus with display function, and more particularly to a selective call radio apparatus having a function of displaying received messages on a display section.

[0002]

[Conventional Technique]

In a conventional selective call radio apparatus of this kind, received messages are stored in a storage section being classified into categories in the sequence of reception or in the predetermined order of priority, or in each previously set classification.

[0003]

The received messages stored in the storage section are read out and displayed on a display section upon a switching operation by a user of the selective call radio apparatus.

Such a selective call radio apparatus is disclosed

in Japanese Laid Open Patent Application (JP-A-Heisei 3-175827) and Japanese Examined Patent Application (JP-B-Heisei 6-50838).

[0004]

Dozens of messages such as news and weather forecasts are sent per day in data receiving service to the selective call radio apparatus described above.

However, those received messages are no read out and displayed in each time every message is received. In ordinary use, whether any message has arrived at the receiver is checked occasionally, and in case there are any messages not yet read, the messages received after reading the message which had been received are read out successively.

[0005]

Therefore, tens of messages may be read out successively by the case. The receiver operates to display the latest message on the display section during the readout of the new messages.

[0006]

[Problems the Invention Tries to Solve]

In this way, the conventional selective call radio apparatus described above operates to display the latest message on the display section during the readout of the new messages.

[0007]

In this case, however, the latest message is

suddenly displayed while the user is viewing the messages in the time series. This causes a problem in that the user cannot distinguish the latest message from the other messages.

[0008]

That is, there is the possibility of the user mistaking the latest message for a message received in the past.

Also, when the user reads out the next message after the user has viewed the latest message, the message already received is displayed in the next of the latest message apart from the order to have been reading so far. This operation of display like this caused the users to be confused.

[0009]

So, the object of the present invention is solving the above-mentioned problem and providing the Selective call radio apparatus with display function, in which the user is able to acknowledge receiving the latest message and that the message is the latest one on the display.

[0010]

[Means for Solving the Problems]

In the present invention of selective call radio apparatus with display function includes a means for memory to storage a received message and

a means for display the message reading out by said

means for memory.

[0011]

In the present invention of selective call radio apparatus with display function includes a means for memory to storage a received message,

a means for display the message reading out by said means for memory, wherein said means for display contains meaning for interrupting to display the message read out by said means for memory and the displaying the latest received massage when the message read out by said means for memory, and

means for control wherein the message, which was displayed just before the said latest message is displayed, should be displayed in the next of said latest message.

[0012]

That is, when receiving a new message during displaying message at the selective call radio apparatus displaying the latest message, the present invention of selective call radio apparatus with display function discriminates the latest message from the other message.

[0013]

Saying more concretely, because the display of latest message is reversed and the latest message is discriminated from the other messages, it is possible to prevent confusion of the latest message and the

message which was received in the past.

[0014]

Also, after the reading out of the latest message, the message to display in the next of the latest message is set as the message which had been read before displaying the latest message. Therefore, it is possible to reduce a stress to read message repeatedly which had been already read.

[0015]

[Embodiments of the invention]

Next, the present invention will be described below with reference to the drawings.

Fig. 1 is a block diagram illustrating the structure of the selective call radio apparatus with a display function according to the embodiment of the present invention.

Referring to Fig. 2, the selective call radio apparatus with a display function according to the embodiment of the present invention is composed of an antenna 1, a radio section 2, a waveform shaping circuit 3, a control section 4, a rewritable ROM (Read-Only Memory) 5, a RAM (Random Access Memory) 6, a display driver 7, a display section 8, amplifier circuits 9 and 11, a speaker 10, an LED (Light-Emitting Diode) 12, a power supply switch 13, a CLK (clock generating circuit) 14, a power supply 15, a switch 16 and a counter 17.

[0016]

A radio signal received at an antenna 1 is demodulated after amplified by the radio section 2. The demodulated signal is converted by the waveform shaping circuit 3 to a waveform as it can be read in the control section 4.

[0017]

In the control section 4, an own call number of it, which has been written in advance in the ROM 5, and the signal supplied from the waveform shaping circuit 3 are compared with. And then, when there is a coincidence between them,

In order to notify the user of a call arrival, the control section 4 sends out an alarm sound from the speaker 10 through the amplifier circuit 9 and the control section 4 make the LED 12 light through the amplifier circuit 11.

In case that there is a message in the received radio signal, the message is displayed at display section 8 through the display driver 8.

[0018]

The selective call radio apparatus with display function according to the embodiment of the present invention is turned on by the power supply 13 and CLK 14. The power supply switch 13 supplies power and a selection of message is done by switch 16.

Also, the counter 17 counts the number of message

read out at reading out message.

[0019]

In the control section 4, a message data stored in the RAM 6 is read out and displayed at the display section 8. While the user is reading the messages successively, the counter 17 counts how many messages are read out.

[0020]

When the latest message is received during the reading operation of the messages, the current message is broken into and the latest message is displayed in such a way that it is discriminated from other messages.

When the display of the latest message is completed, the message, which had been displayed immediately before the latest message is displayed, is controlled to display based on the count number of the counter 17.

[0021]

Fig. 2 is a diagram illustrating a pattern of the message display function according to the embodiment of the present invention. A pattern of the conventional message display function is illustrated in Fig. 5. A difference between the message display function according to the embodiment of the present invention and the conventional message display function will now be described with reference to Figs. 1, 2 and 5.

[0022]

When the user reads out the messages, the messages are displayed in the order of their reception times, (namely in the order from the latest message →up to the oldest message). According to the embodiment of the present invention, the messages are read out in the order of a message #1 (101) → a message #2 (102) → a message #3 (103) → .→ a message #m (104).

If the latest message is received during the reading of the message #m (104), the display of message #m is interrupted and the latest message is displayed.

[0023]

The latest message (105) is displayed in a color inversion so that the latest message is distinguished from the messages which the user has viewed until then.

Also, other ways of achieving to distinguish the latest message and the other messages are displaying in a highlighted display or displaying in boldface or displaying in a varied typeface.

[0024]

When the user attempts to view the next message, the message, which is returned to continuation status as the user had viewed last, is displayed.

That is, following the latest message, the message #m (106), a message #m+1 (107), a message #m+2 (108) ... are displayed in the order.

[0025]

In the conventional way, the messages are read out in the order of a message #1 (201) → a message #2 (202) → a message #3 (203) → .→ a message #m (204). If the latest message is received during the reading of the message #m (204), the latest message(205) is displayed at the first.

[0026]

The following message displayed after finishing viewing the latest message is the new message #1 (206) in the next of the message which was just received.

Further, going on viewing a message, it is displayed like message #2(207), message #3(208).

[0027]

Figs. 3 and 4 are flowcharts showing a message display operation according to the embodiment of the present invention. The message display operation according to the embodiment of the present invention will now be described with reference to Figs. 1,3, and 4.

[0028]

According to the embodiment of the present invention, when the user tries to read the messages at the status that the selective call radio apparatus displays a wait screen(a step S1 shown in Fig. 3), the latest message regarding received time (message #1)is displayed (a step S2.S3 shown in fig.3).

[0029]

After the message is read out, the operation whether the user wants to view the next message or stop the reading out the next message is determined. (A step S4 shown in Fig. 3). When the user determined to stop the reading out, the display returns to the wait screen by manual reset (MR) or auto reset (AR) (a step S5 shown in Fig. 3).

[0030]

On the other hand, when the user tries to read the next message, the new message with the second regarding receiving time (message 2) is read out by the switching operation (a step S6 shown in Fig. 3).

After the message #2 is read out (a step S7 shown in Fig.3), wait screen is displayed again by manual reset or auto reset (a step S8 shown in Fig.3). The operation as mentioned above, reading out of message is repeated.

[0031]

In the operation of reading out mentioned above, when viewing message #m, that is the message in the order of # (a step S9 shown in Fig.3) and receiving the latest message (a step S10 shown in Fig.3), the latest message just received is displayed discriminating from the other messages (a step S13 shown in Fig.3).

[0032]

After the viewing this latest message, the user

determines whether he tries to view the next message (a step S14 shown in Fig.3) or executes manual reset or auto reset to display the message which had been viewed before viewing the latest message(message #m) at the display section 8(a step S16 shown in Fig.3).

[0033]

Further, when the user continues to read out massages, the operation mentioned above is repeated such like #(m+1), #(m+2)・・・・, in the order of recentness regarding receiving time at display section 8.

[0034]

In the case where no latest message is received during the reading out the message (the step S10 shown in Fig. 3), if neither the manual reset nor auto reset are executed, the next message is read out (the step S17 shown in Fig. 3), and message #(m+1) is displayed at display section 8.

[0035]

In case the user does not try to view the next message (the step S17 shown in Fig. 3), returns to the wait screen by executing manual reset or auto reset.

Same as mentioned above, when it completes the reading of the final message (the message #n in this case), acknowledgement of message is terminated and returns to the former wait screen(the step S21 shown in Fig. 3).

[0036]

Thus, under the condition that the ROM 6 contains n messages stored therein, if the latest message is received at the time the user has read the m messages, which is the number from the latest message to m-th message, the latest message is firstly displayed on the display section 8 in the way as shown in Fig. 2. in this time, the number of messages stored in the ROM 6 becomes n+1.

[0037]

And when the user attempts to read the next message by operating the switch 16 thereafter, the m+1(th) message (the message one number older than the latest message) is displayed.

[0038]

Therefore, even if the latest message is received while the user reads the messages, the latest message is displayed on the display section 8 so as to be discriminated from other messages, under the control performed by the control section 4. Since the latest message is displayed so that the user can clearly distinguish the latest message from other messages, the user can read the latest message without confusion with the messages received in the past.

[0039]

Furthermore, when the user desires to read the message next to the latest message, it is possible for

the user to read the message (message #) which the user has been read in the order just before the latest message. Therefore, a stress to view the messages repeatedly which had been once read in the past (moreover, to return back a message by one and one from the latest message without willing of the user) is to be canceled.

[0040]

[Effect of the invention]

As described above, according to the selective call radio apparatus with the message display function of the present invention wherein a received message is stores and the stored message is displayed, the latest message, which is received during display of the stored messages, is controlled to display with discrimination from the stored messages. This makes it possible for the user to understand that the latest message is received and the message is the latest in the display.

[Brief Description of the drawings]

[Fig. 1] A block diagram illustrating the structure of a selective call radio apparatus with a message display function according to an embodiment of the present invention;

[Fig. 2] A diagram illustrating the display pattern according to an embodiment of the present invention;

[Fig. 3] A flowchart to show the message display operation according to the embodiment of the present invention.

[Figs. 4] A flowchart to showing a message display operation according to the embodiment of the present invention.

[Figs. 5] A flowchart to showing a message display pattern according to the embodiment of the conventional invention.

[Description of the reference Numerals and Symbols]

1 antenna

2 radio section

3 waveform shaping circuit

4 control section

5 ROM

6 RAM

7 display driver

8 display section

9,10 amplifier circuit

10 speaker

12 LED

13 power supply switch

14 clock generating circuit

15 power supply

16 switch

17 counter

[Document Name] Abstract

[Abstract]

[Object] providing a selective call radio apparatus with the display function wherein it is possible for the user to understand that the latest message is received and the message is the latest at the displaying.

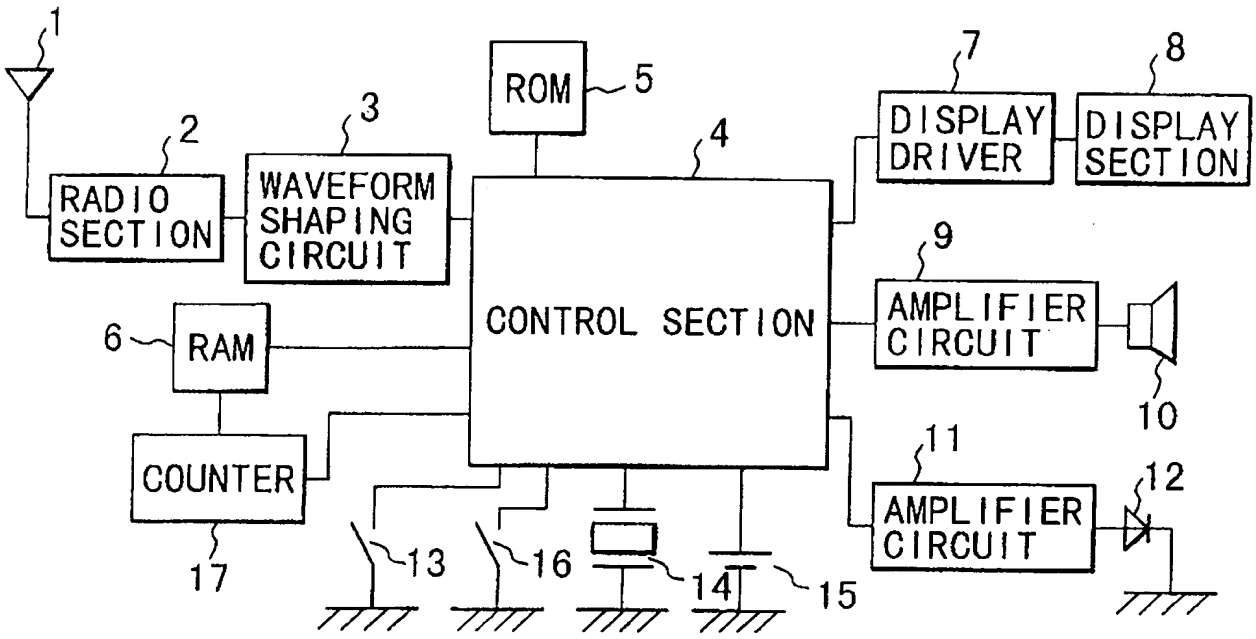
[Solving Means]

A control section 4 reads out a message data stored in the RAM 6 and displays it at the display section 8. While the user is reading the messages successively, the counter 17 counts how many messages are read out. When the latest message is received during the reading operation of the messages, the current message is broken into and the latest message is displayed discriminated from other messages on the display section 8 by control section 8 And when the display of the latest message is completed, the control section 8 controls to display the message, which had been displayed just before the latest message is displayed, based on the counter number of the counter 17.

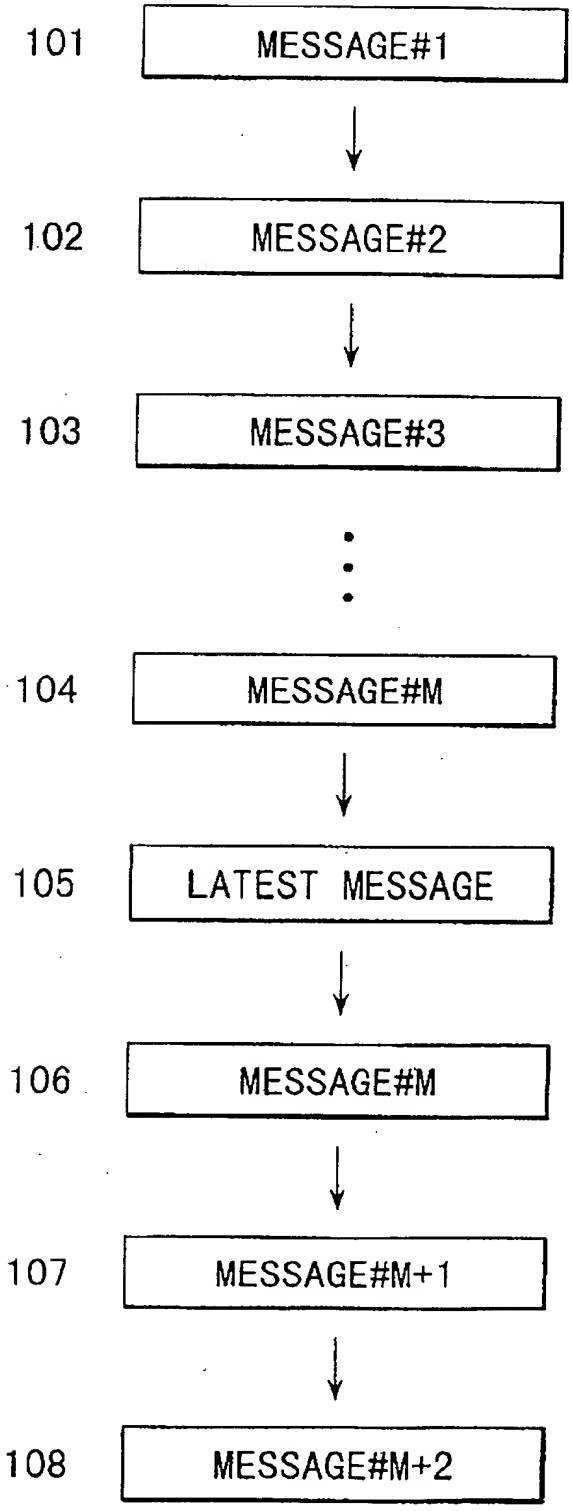
[Selected Drawing] Fig.1

[Document Name] Drawings

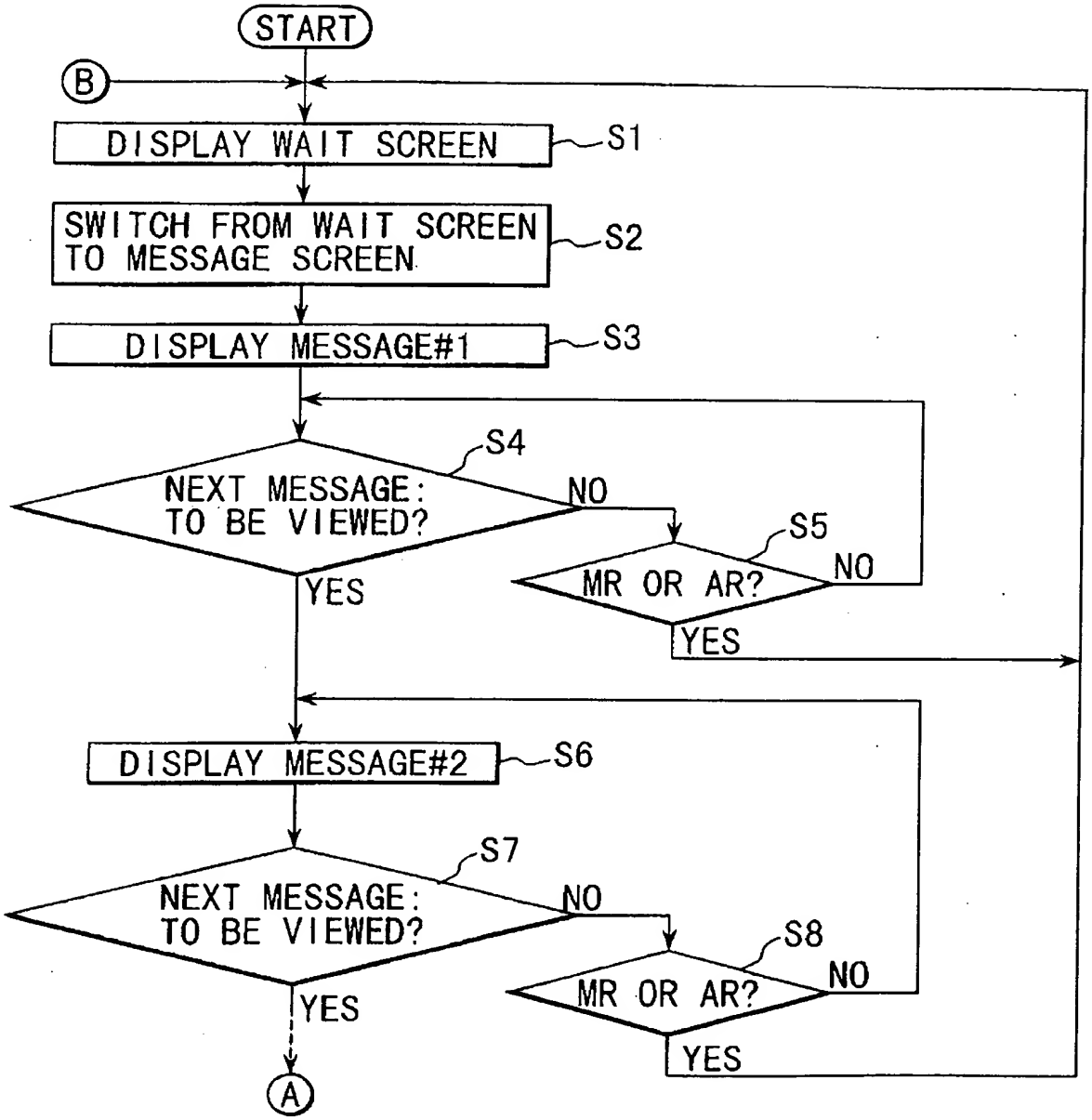
[Fig. 1]



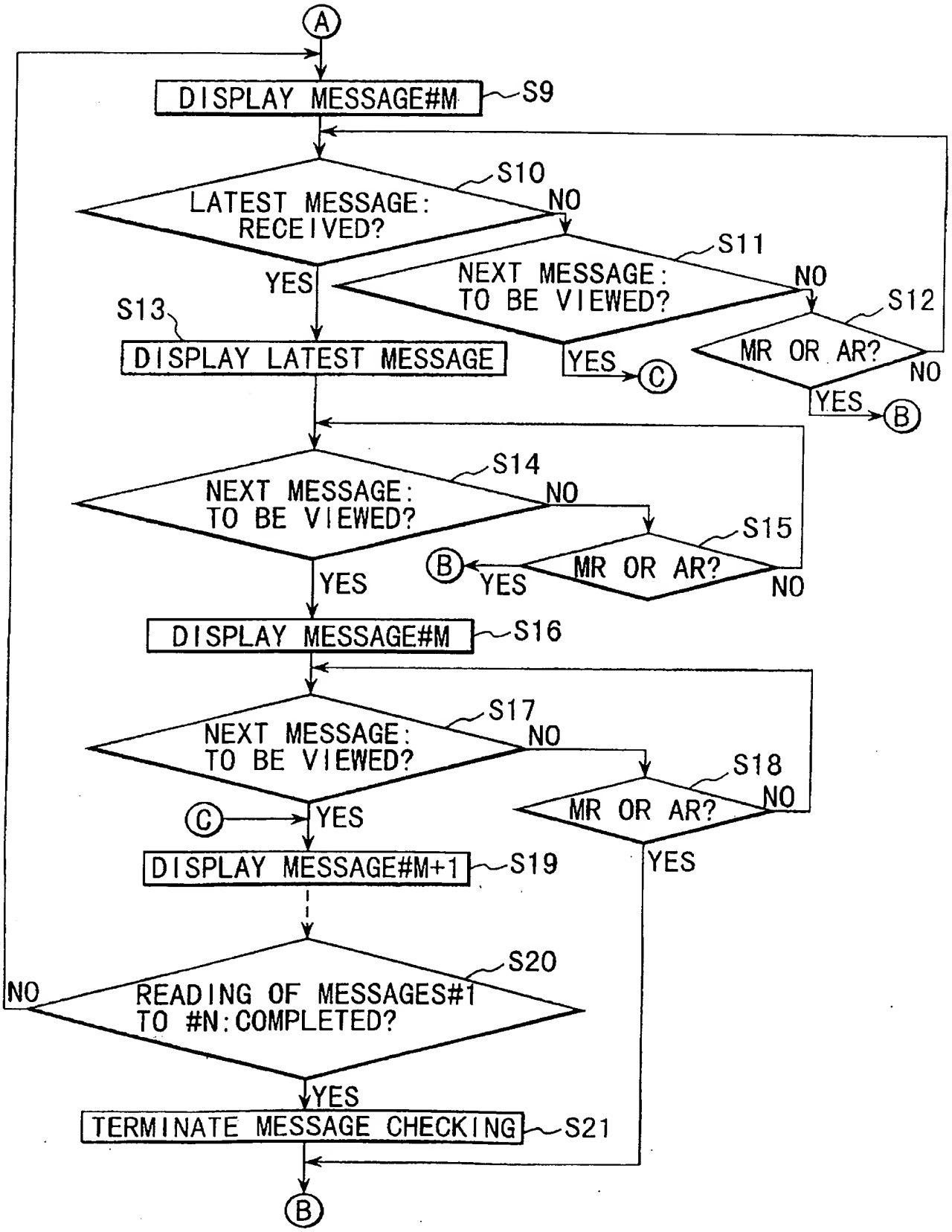
[Fig. 2]



[Fig. 3]



[Fig. 4]



[Fig. 5]